SOUTHERN AUSTRALIAN GASTROPODA

PART II DOLIACEA

By Bernard C. Cotton

[Read 13 September 1945]

In this paper are given notes, records and descriptions of new species of Mollusca belonging to the superfamily Doliacea.

For many years the large collection of Australian Gastropoda in the South Australian Museum has been undergoing the process of being arranged in biological order. Good series from numerous localities now enable notes to be readily made on new species, variations, range and exact localities. In past lists the records are frequently given or implied as merely "South Australia," which covers a very big portion of the Flindersian Region.

The following abbreviations are used in the tabular lists of Australian species: —N.A., North Australia, the North Coast of Australia and the Islands between Queensland and North-Western Australia; N.Q., North Queensland; S.Q., South Queensland; N. N.S.W., North New South Wales; S. N.S.W., South New South Wales; E. Vict., East Victoria; W. Vict., West Victoria; E. S.A., East South Australia; W. S.A., West South Australia; S. W.A., South Western Australia; N. W.A., North Western Australia; E. Tas., East Tasmania; S. Tas., South Tasmania; W. Tas., West Tasmania; N. Tas., North Tasmania; S. Pac., South Pacific; Ind. Oc., Indian Ocean.

Depths are indicated in the tables as "S" for shallow water or littoral species, "dredged" where they are from uncertain or unknown depths, and where the depths are known numbers are given representing fathoms. An asterisk indicates that the species in the genotype of the genus listed. "T" indicates "type locality."

Family CASSIDIDAE

The species form a remarkable assemblage of shallow, deeper water and varied geographical forms showing sometimes definite and at other times obscure diagnostic differences.

Phalium bandatum (Perry 1811)

Cassidea bandata Perry 1811, Conch., pl. xxxiv, fig. 2.

Fig. 1 A

Loc.—East Indies (type). Queensland: Harvey Bay; Bundaberg; Cooktown. New South Wales: Byron Bay. Western Australia: Carnarvon. North Australia: Groote Eylandt; Connexion Island.

Remarks—A single specimen of this species, of which *coronulata* Sowerby 1825 is a synonym, from Carnarvon, is very heavily built and measures 112 mm. in height.

Xenogalea denda Cotton 1945

Xenogalea denda Cotton 1945, Trans. Roy. Soc. S. Aust., 69, (1), 169.

Remarks—A figure of this recently described species is given here. Iredale 1927, Rec. Aust. Mus., 15, 342, when discussing *pyrum* and *stadialis* states "Still another shell from Tasmania, apparently a beach specimen, is superficially a large, smooth, unicolour *stadialis,* though just as certainly a *pyrum* form." This

may be *denda,* but I have not seen such a specimen in the May Collection material so far examined. From the type locality, 100 fms., Great Australian Bight, are two micromorphs, the largest 39 mm. in height, and there are no intermediates connecting with *denda.* Micromorphs of *stadialis* Hedley are also known from 25-50 fms. from the Continental Shelf of New South Wales.

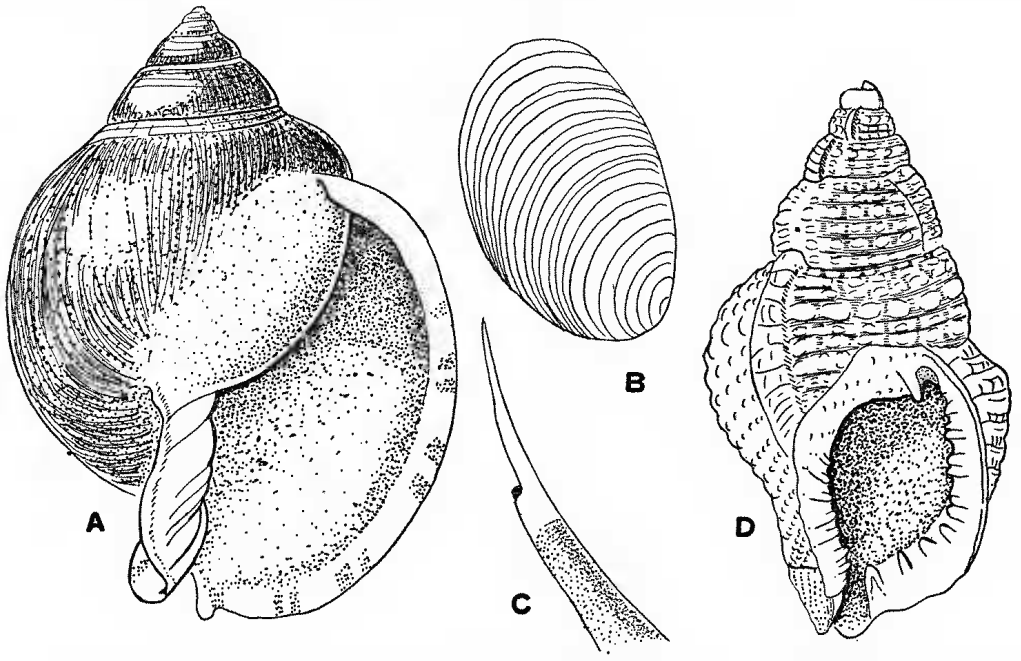

Fig. 1
A—*Xenogalea denda* n. sp., shell. B-C—*Gondwanula bassi* Angas: B, operculum; C, tentacle.
D—*Negyrina delecta* n. sp., shell

Australian Species of CASSIDIDAE are here listed

Genus and Species	Depth	N.A.	N.Q.	S.Q.	N. N.S.W	S. N.S.W.	E. Vict.	W. Vict.	E. S.A.	W. S.A.	S. W.A.	N. W.A.	E. Tas.	S. Tas.	W. Tas	N. Tas.	S. Pac.	Ind. Oc.
Cassis Scopoli 1777—																		
*cornuta** Linné 1758	S	x	x															T
Nannocassis Iredale 1927—																		
*nana** Tenison Woods 1879	S			T	x													
torva Iredale 1927	S			T														
Hypocassis Iredale 1927—																		
*"decresensis"** Hedley 1923	S								T	x								
fimbriata Quoy & Gaim. 1833	S										T							
bicarinata Jones 1839	S							x	T	x	x							
Cypraecassis Stutchburyi 1837																		
*rufa** Linné 1758	S	x	x									x					x	T
Phalium Link 1807—																		
*glaucum** Linné 1758	S	x	x									x					x	T
areola Linné 1758	S		x	x	x							x					x	T
bandatum Perry 1811	S		x	x	x							x					x	T
agnitum Iredale 1927	S										T	x						
Xenophalium Iredale 1927—																		
*hedleyi** Iredale 1927	70					T												

Australian CASSIDIDAE (continued)

Genus and Species	Depth	N.A.	N.Q.	S.Q.	N. N.S.W	S. N.S.W.	E. Vict.	W. Vict.	E. S.A.	W. S.A.	S. W.A.	N. W.A.	E. Tas.	S. Tas.	W. Tas.	N. Tas.	S. Pac.	Ind. Oc.
Semicassis Mörch 1852—																		
diuturna Iredale 1927	S	x	x	x	T													
Casmaria H. & A. Adams 1853																		
*ponderosa** Gmelin 1791 ..	S			x	x												x	T
erinaceus Linné 1758	S	x	x															T
vibex Linné 1758	S	x	x														x	T
Xenogalea Iredale 1927—																		
*pyrum** Lamarck 1822	S					x	x	x					x	T				
stadialis Hedley 1914	50-100					x	T									x		
denda Cotton 1945	100-250										T							
thomsoni Brazier 1875	45-100					T												
palinodia Iredale 1931	drdgd.				x	T												
nashi Iredale 1931	drdgd.					T												
sophia Brazier 1872	S			x	x	T												
nivea Brazier 1872	S								x						T			
mawsoni Cotton 1945	120							x			T							
paucirugis Menke 1843 ..	S								x	x	T							
lucrativa Iredale 1927	S	x	T															
labiata Perry 1811	S			x	x	T												
inseparata Iredale 1927 ..	S			x	x	T												
angasi Iredale 1927	S			T	x													
spectabilis Iredale 1929 ..	50-60					T												
Antephalium Iredale 1927—																		
*semigranosa** Lamarck 1822	S						x	x	x	x	x		x	T	x	x		
adcocki Sowerby 1896	S							x	T	x	x							
sinuosum Verco 1904	15-20							x	T									
angustatum Cott. & Godf. 1931	20								T									

Family CYMATIIDAE

CYMATILESTA BARTHELEMYI (Bernardi 1857)

Triton barthelemyi Bernardi 1857, Journ. de Conch., 2, 54, pl. i, fig. 1.

Loc.—Victoria (type). South Australia: Beachport. Tasmania: Frederick Henry Bay.

Remarks—The species enters the South-East of South Australia, but I have not taken it elsewhere in that State or Western Australia. Verco 1895, Trans. Roy. Soc. S. Aust., 102, recorded *spengleri* from Middleton and Port Lincoln on the authority of Adcock and Matthews, but these shells may have been *waterhousei*. The only specimen I can find from the Matthews collection and labelled "Middleton" is certainly *waterhousei*. The South Australian and Tasmanian shells are much more obese than the typical *spengleri* of New South Wales. The Tasmanian shells grow to a large size and have very wide varices, remarkably expanding the outer lip. Three examples of this species measure: Height 140 mm., width 90 mm., Port Albert, Victoria; height 133 mm., width 77 mm., Beachport, South Australia; height 170 mm., width 100 mm., Frederick Henry Bay, Tasmania. In comparison a shell from Port Jackson, *Cymatilesta spengleri*, measures 157 mm. x 79 mm. and is comparatively longer in the spire. Queensland shells are similar in ratio of height to width. I have not seen deep water forms of *barthelemyi* so far.

CYMATILESTA WATERHOUSEI (Adams and Angas 1864)

Triton waterhousei Adams and Angas 1864, Proc. Zool., 35.

Loc.—South Australia: Port Lincoln (type), Kangaroo Island, Encounter Bay, Gulf St. Vincent, Spencer Gulf, Pondolowie Bay, Beachport, Point Sinclair; dredged, Eastern Cove, 14 and 19½ fms.; Backstairs Passage, 16½ and 20 fms.; Royston Head, 22 fms.; Port Lincoln, 9 fms.; Newland Head, 20 fms.; Thorny Passage, 25 fms.; Beachport, 40 fms.; St. Francis Island, 15 to 20 fms. Alive down to 25 fms. Western Australia: Esperance, Albany, Ellenbrook, Bunbury.

Remarks—The species is thinner and lighter than *spengleri* and has a broad flattened varix forming the outer lip on which the external ribbing is produced, not the internal sculpture as in *spengleri,* and also the spiral lirae are double. The periostracum has a series of longitudinal fringes with numerous projecting bristles, sometimes up to 5 mm. in length, and the interspaces are covered with a system of delicate periostracum lamellae forming a right-angled criss-cross pattern. Sizes for the shells are as follows:

Height 120 mm.,	width 65 mm.	Port Lincoln, South Australia.
Height 94 mm.,	width 55 mm.	Point Sinclair, South Australia.
Height 67 mm.,	width 38 mm.	Hardwicke Bay, South Australia.
Height 66 mm.,	width 34 mm.	Reevesby Island, South Australia.
Height 125 mm.,	width 63 mm.	Beachport, South Australia.
Height 61 mm.,	width 31 mm.	Albany, Western Australia.
Height 33 mm.,	width 20 mm.	Bunbury, Western Australia.
Height 63 mm.,	width 36 mm.	Port Fairy, Victoria.

Tritonium tabulatum Menke 1843, described from Western Australia, was said to be intermediate between *pileare* and *cutacea* and it is probably a juvenile of *waterhousei,* about 1⅓″ long, but the name could be used subspecifically for the Western Australian form, which appears to be noticeably smaller.

CABESTANIMORPHA EXARATA Reeve 1844)

Triton exaratum Reeve 1844, Proc. Zool. Soc., 116.

Loc.—North Australia (type). Queensland. South Pacific. New South Wales. Victoria. South Australia: Guichen Bay, MacDonnell Bay, Robe. Western Australia: Albany, Bunbury, Ellenbrook, Cambridge Gulf, Fremantle 10 to 12 fms., Yallingup, Cottesloe.

Remarks—This North Australian species ranges down the western coast to Cape Leeuwin, and down the eastern coast round to the South-East of South Australia, but along the southern coast between these two points it has not been taken, nor has it been taken in Tasmania. Specimens from Albany range up to 45 mm. in height.

Cabestanimorpha euclia sp. nov.
(Fig. 2)

Shell small, thin, whorls shouldered above, crossed by weak roundly flattened major spiral ribs, about five on the body-whorl with obsolete fine spirals between and splitting them; spiral, sculpture finely undulated by regular weak axial grooves: the two rather more bold shoulder ribs carrying twin tubercles, where six obsolete axial undulations cross the major spirals, forming six pairs on the body whorl and correspondingly fewer on the spire; outer lip varix thin but well folded in; the next varix almost directly above but slightly to the left of the columella axis; aperture rather wide and pyriform produced into a long, narrow slightly sinuous anterior canal; protoconch long of four highly polished shelly whorls, very slowly increasing in size. Height 20 mm., diameter 12 mm.

Loc.—Western Australia: nine miles west of Eucla, 100 fms (type); 80 miles west of Eucla, 81 fms.

Remarks—Three adults and a couple of fragmentary juveniles. At first the species was thought to be *elongatus* Reeve or *vespaceum* Lamarck, from the shape and long canal. It is, however, quite distinct and may be a deep water species related to *exarata*. Holotype, Reg. No. D. 6515, S. Aust. Museum.

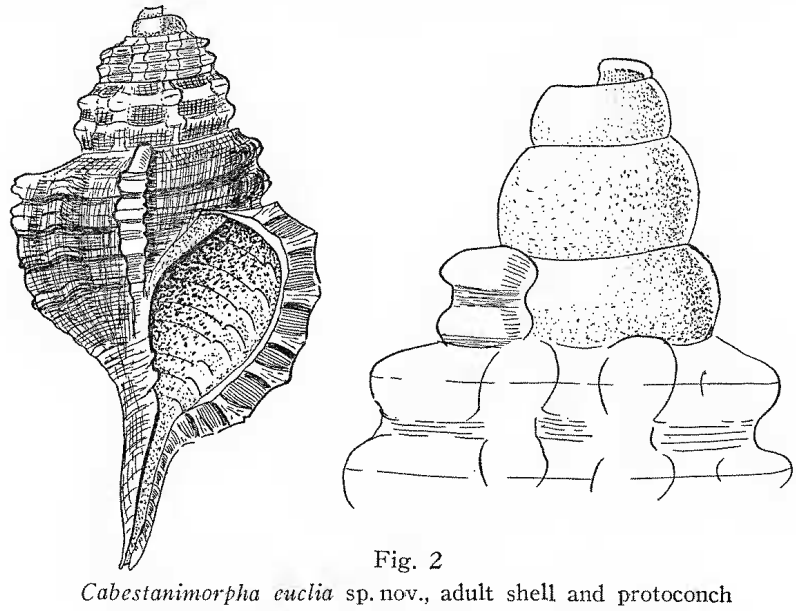

Fig. 2
Cabestanimorpha euclia sp. nov., adult shell and protoconch

MONOPLEX PARTHENOPIUM (von Salis 1793)

Murex parthenopium von Salis 1793, Reis Neap., 370, pl. vii, fig. 1.

Loc.—New South Wales. Victoria. New Zealand.

Remarks—Hedley recorded this from the Great Australian Bight, 80 to 120 fms., Western Australia. After careful searching in the Verco and May collections, I can find no specimens of this species from Western Australia, South Australia or Tasmania, either from shallow or deep water. The distribution is apparently somewhat similar to that of *Cabestanimorpha exarata,* except that the present species does not occur even in the South-East of South Australia.

PARTICYMATIUM LABIOSUM (Wood 1828)

Murex labiosum Wood 1828, Suppl. Index Test., 15, pl. v, fig. 18.

Loc.—New South Wales (type). Queensland: Moreton Bay.

Remarks—Iredale 1936, Rec. Aust. Mus., 19, No. 5, remarked upon the resemblance of Wood's figure to the Sydney shell known as *strangei* Adams and Angas 1864, which is probably a synonym, and the New Zealand so-called *"labiosum,"* a distinct species.

PARTICYMATIUM GEMMATUM Reeve 1844

Triton gemmatum Reeve 1844, Conch. Icon., 2, pl. xv, fig. 60 a.

Loc.—Philippines (type). Western Australia: Shark Bay. North Australia: Murray Island. Queensland.

NEGYRINA SUBDISTORTA (Lamarck 1822)

Triton subdistorta Lamarck 1822, An. S. Vert., 7, 186.

Loc.—New South Wales. Victoria. Tasmania. South Australia (type): Kangaroo Island; St. Francis Island; Robe; dredged Beachport, 40 fms.; Yan-

kalilla Bay, 10 to 15 fms.; Corny Point, 27 fms.; Investigator Strait, 19 fms.; Backstairs Passage, 17 to 20 fms.; Royston Head, 22 fms.; Newland Head, 20 fms.; Spencer Gulf, 12½ fms.; alive down to 22 fms.

Remarks—Typical specimens are taken in South Australia. Reeve gives "Port Adelaide and King George's Sound" as localities, but although common in South Australia I have never seen a single specimen from Western Australia or from further west than St. Francis Island. It has never been taken with the protoconch present however small the living specimen, so that it must be very early deciduous. The periostracum has very short, close-set hairs arranged in both axial and spiral lines. The aperture varies very greatly. In some examples of even large size there is scarcely any labial callus and the labrum shows only the gutter of the varix. In others the mouth is almost completely circular and funnel-shaped, the outer lip expanded and somewhat reflected; the inner lip has a wide-spread parietal callus, which is free and expanded over the columella into a wide sloping lamina.

Negyrina delecta sp. nov.

(Fig. 1 D)

Shell small, fusiform, thick, whorls slightly asymetrical, rounded, scarcely angled; colour cream with a system of numerous intergranular reddish-brown dots, the small granules themselves cream; sculpture consisting of numerous series of small granules arranged in spiral; alternate spirals with slightly larger or smaller granules; at the rounded shoulder of the body whorl there is a tendency to form a row or two of a little more prominent tubercules; varices low rounded ribs, seven in number; aperture small and rounded, inner lip ridged within, slightly effuse but well within the border of the last varix; columella spread with a thin glazed reflection of the inner lip; anterior canal short and narrow. Height 45 mm., diameter 24 mm.

Loc.—South Australia: Middleton (type), St. Francis Island, Kangaroo Island, Point Sinclair.

Remarks—Holotype, Reg. No. D. 14202, S. Aust. Museum. This species is distinguished from *subdistorta* by the smaller, more solid shell, rounded not shouldered whorls, the distinctive colour pattern, small aperture and short anterior canal. When taken alive it is a beautiful shell, generally of a light yellowish-orange tint with spiral series of square dark purple black spots varying in size in different spirals and occupying the spaces between the small nodulations; sometimes the ground colour is light purple. This species does not appear to be dredged in depths below 5 fms. and is essentially littoral. Juveniles are consistently different and easily distinguished from those of *subdistorta.* The protoconch, as in *subdistorta,* is early deciduous, and no adults or juveniles in the collection retain it.

NEGYRINA PETULANS (Hedley and May 1908)

Septa petulans Hedley and May 1908, Rec. Aust. Mus., 7, No. 2, 118, pl. xxiii, fig. 16.

Loc.—Tasmania: Pirates Bay Beach, near Cape Pillar (type loc.). South Australia: Beachport, 150 and 200 fms. Victoria: Port Fairy.

Remarks—The broken specimen from 200 fms. on which Verco based the South Australian record is before me and appears similar to May's "cotypes' from 100 fms. seven miles east of Cape Pillar and a living specimen from 80 fms. 10 miles east of Schouten Island, but I have not seen May's holotype in the Hobart Museum, which is said to have been taken on the beach. Two further poor broken specimens separated from dredged material taken in 200 fms. off Beachport show variation, being more strongly noduled at the shoulder of the whorls, but still agreeing with the Tasmanian specimens in size and general

features. It would seem that the holotype of *petulans,* according to Hedley and May's figure, is an extreme variant in which the nodules are reduced, our South Australian forms covering both extremes. Three perfect, fresh specimens, the best I have seen, have the locality Victoria? Kenyon Collection.

CYMATOMA KAMPYLA (Watson 1886)

Nassaria kampyla Watson 1886, Journ. Linn. Soc. Lond., **16**, 594.

Loc.—New South Wales: off Sydney, 410 fms. (type). Victoria. Tasmania, 30 and 100 fms. South Australia: Beachport to Cape Jaffa, 90 to 200 fms.

Remarks—There are two distinct variants of the species in South Australia, found in the same localities and depths:

(*a*) Nearest to typical *kampyla.* Protoconch large and similar to (*b*), but generally more sturdy. Shell more solid, anterior canal shorter, less curved; sculpture more valid.

(*b*) Thinner and less sturdy, sculpture less valid, longer in proportion to the width than in the typical *kampyla.*

The type locality of *Lampusia nodocostata* Tate and May 1900 was "East coast of Tasmania," and it is a direct synonym of *kampyla.* We have a good series from 100 fms. off Cape Pillar and 30 fms. off Storm Bay, Tasmania.

GONDWANULA BASSI (Angas 1869)

Triton bassi Angas 1869, Proc. Zool. Soc., 45, pl. ii, fig. 3.

(Fig. 1 B-C)

Loc.—Victoria: Bass Straits (type). Tasmania: North Coast. South Australia: Eastern Cove, Kangaroo Island; Point Sinclair; St. Francis Island; dredged Beachport, 110 fms.; Gulf St. Vincent, 14 and 17 fms.

Remarks—The species is rare but has been taken alive on rocky beaches at Point Sinclair, the shell being purplish-brown, but white in specimens dead on the beach.

South Australian specimens are much less nodulated than the Tasmanian shell and the spiral ridges are much wider and flatter. South Australian shells have only two nodules, Tasmanian six or seven and much sharper. Tasmanians have also two finer angulations anteriorly, which are finely tuberculated; these are absent in South Australian shells. The embryonic shell, unlike that of *Negyrina subdistorta* is usually present, being blunt and rounded. Living specimens dredged in Backstairs Passage, 17 fms., have an ovate not acute operculum, with the nucleus anterior, a little external to the middle line. The foot is about one-half the length of the shell and about half as broad as long, of a dull yellowish-white colour tinted with red in minute spots at the posterior extremity. The tentacles are about as long as the foot is wide, of a crimson red colour and with the black eyes on their outer sides at about one-quarter of their length from the bases of the tentacles, which are white for a short distance immediately below the eyes.

GONDAWANULA FRATERCULUS (Dunker 1871)

Triton fraterculus Dunker 1871, Malak. Blatt., 166.

Loc.—South Australia: Thorny Passage, 25 fms.; Tunk Head; St. Francis Island, 15-20 fms.; Point Sinclair (Weeding). Victoria: Bass Straits (type).

Remarks—The species appear to occur as far west as St. Francis Island. It is not represented in any Western Australian material I have examined. *Sipho mimeticus* Tate 1893, holotype from Tapley's Shoal, eight miles off Edithburgh, 12 to 16 fms., is a synonym.

GONDWANULA TUMIDA (Dunker 1862)

Ranella tumida Dunker 1862, Proc. Zool. Soc., 239.

Loc.—Tasmania (type). Victoria. Western Australia. South Australia: Port MacDonnell, Pondolowie Bay.

Remarks—There are two small beach-worn specimens in the collection, one from "Middleton" and one from "MacDonnell Bay," both of doubtful origin, and there are two specimens in the Elliott Collection from Middleton and Pondolowie Bay.

CYMATIELLA VERRUCOSA Reeve 1844

Triton verrucosus Reeve 1844 Conch. Icon., Triton, pl. xvii, fig. 71.

Loc.—Victoria (type). Tasmania. South Australia: Port MacDonnell; Pondolowie Bay; Streaky Bay; dredged Backstairs Passage, 20 fms.; Cape Borda, 55 fms. and 60 fms.; Cape Jaffa, 130 fms.; Beachport, 40 fms and 110 fms.; Ardrossan, 14 fms.; Wallaroo, 15 fms.

Remarks—The species is distinguished by the coarse sculpture and well open wide mouth. It is probably less common than the very plentiful *gaimardi.* No specimens from Western Australia have been seen by me. *Triton quoyi* Reeve 1844 is a synonym.

CYMATIELLA GAIMARDI (Iredale 1929)

Cymatiella gaimardi Iredale 1929, Rec. Aust. Mus., 17, No. 4, 174, pl. xl, fig. 7.

Loc. — South Australia: Port Lincoln (type); Normanville; Kangaroo Island, American River; Encounter Bay; Robe; Troubridge; Gulf St. Vincent; Spencer Gulf; Henley Beach; Glenelg; Port Wakefield; Point Sinclair; dredged, Yankalilla Bay, 10 to 15 fms.; Rapid Head, 9 to 12 fms.; Port Lincoln, 9 fms.; Corny Point, 30 fms.; Hardwicke Bay, 8 to 10 fms.; St. Vincent Gulf, 5, 7, 9, 15 and 17 fms.; Investigator Straits, 13 fms. and 15 fms.; Backstairs Passage, 16 fms.; Eastern Cove, Kangaroo Island, 11 and 14 fms.; Spencer Gulf, 20 fms.; Porpoise Head, 17 fms.; Newland Head, 20 fms.; alive down to 30 fms. Western Australia: Esperance Bay; Hopetoun.

Remarks—Shell narrower, more attenuate than *verrucosa,* aperture smaller and more closed, sculpture coarse. This species is common in South Australia. Examples from Pondolowie Bay, Spencer Gulf, have a dark brown crescentic blotch at the extreme upper end of the labial varix, and so indicate throughout the spire the site of previous labial varices. Shells from St. Francis Island, Esperance and Hopetoun are prettily decorated with spiral brown bands and dots.

CYMATIELLA LESUEURI Iredale 1929

Cymatiella lesueuri Iredale 1929, Rec. Aust. Mus., 17, No. 4, 175, pl. xl, fig. 11.

Loc.—Victoria: Port Phillip (type). East Tasmania. South Australia: Middleton; Robe; St. Francis Island; Gulf St. Vincent; Spencer Gulf; Beachport, 40 fms.; Backstairs Passage, 22 fms.; Middleton, 10 fms. Western Australia: Hopetoun; Yallingup; Rottnest.

Remarks—Although comparatively common in South Australia I have seen only three specimens, one from each locality mentioned, in Western Australia.

CYMATIELLA COLUMNARIA (Hedley and May 1908)

Cymatium columnarium Hedley and May 1908, Rec. Aust. Mus., 7, No. 2, 119, pl. xxiii, fig. 15.

Loc.—Tasmania: Cape Pillar, 100 fms. (type); south and east coasts. South Australia: Beachport, 40, 100, 110, 150 and 200 fms.; Cape Jaffa, 130

fms.; Cape Borda, 60 fms.; Neptunes, 104 fms. Western Australia: West of Eucla, Great Australian Bight, 50 to 120 fms., 100 fms., and 75 fms. off Beachport.

Remarks—Probably a deep water form of *gaimardi.*

RATIFUSUS MESTAYERAE Iredale 1915

Ratifusus mestayerae Iredale 1915, Trans. N.Z. Inst., 47, 466.

Loc.—New Caledonia (type). New South Wales. Victoria. Tasmania. South Australia: Port MacDonnell. Western Australia: Albany.

Remarks—The species is not uncommon in the South-East of South Australia but I have not seen it from elsewhere in the State.

RATIFUSUS ADJUNCTUS Iredale 1929

Ratifusus adjunctus Iredale 1929, Rec. Aust. Mus., 17, (4), 183, pl. xl, fig. 5.

Loc.—New South Wales: Montague Island, 50-60 fms. (type). South Australia: Beachport, 110, 150 fms. and 200 fms.

Remarks—A perfect South Australian specimen is half as big again as the holotype, being 25 mm. in length and appears to have finer sculpture and a slightly wider aperture. Hedley 1911 recorded *schoutanicus* May from Cape Wiles 100 fms., but I have not seen specimens from South Australia, and as the species is merely listed it is questionable whether the species is *schoutanicus* or the deeper water Eastern Victoria *conterminus* from 100-250 fms. of East Victoria.

RATIFUSUS BEDNALLI (Brazier 1875)

Colubraria bednalli Brazier 1875, Proc. Linn. Soc. N.S.W., 6.

Loc. South Australia: Guichen Bay (type), Gulf St. Vincent and Spencer Gulf; Encounter Bay; Robe; MacDonnell Bay; Corny Point; Daly Head; dredged Beachport 40, 110, 150 and 200 fms.; Cape Jaffa, 130 fms.; Cape Borda, 55 fms.; Backstairs Passage, 16, 18, 19, 20 and 22 fms.; Newland Head 20 fms.; Porpoise Head, 12 fms. Western Australia: Rottnest. Victoria: Western Port.

Remarks—Specimens from 40 fathoms and below show a rather different sculpture, the longitudinal sculpturing predominating, but the difference is not consistent. The species is plentiful in South Australia, especially on open ocean beaches, but rarer in Gulf St. Vincent.

CHARONIA RUBICUNDA (Perry 1811)

Septa rubicunda Perry 1811, Conchology, pl. xiv, fig. 4.

Loc.—New South Wales (type). Queensland. Victoria. Tasmania. South Australia: Kangaroo Island; Thistle Island; Outer Harbour. Western Australia: Ellenbrook; Albany; Bunbury; Yallingup.

Remarks—A specimen of this Australian species in our collection from Albany is the typical shallow water form, measuring 192 mm. x 115 mm., and similar specimens are represented from Ellenbrook up to 175 mm. x 85 mm. The shell is taken alive off Kangaroo Island, and the Outer Harbour record is probably due to a specimen having been tossed out there from a crayfish boat, returning from Kangaroo Island. The shell grows large and thick in the Flindersian Region, a specimen from Kangaroo Island measuring 210 mm. x 110 mm.

CHARONIA EUCLIA Hedley 1914

Charonia nodifera euclia Hedley 1914, Zool. Res. Endeavour, 2, 65, pl. viii.

Loc.—Western Australia: Great Australian Bight, 80-120 fms. (type), 100 fms. (Verco); dredged, Albany; Rottnest.

Remarks—This species is not necessarily distinguished from *rubicunda* by the narrow form, for both wide and narrow variants of the latter shore species occur right along the Southern Australian shore line from South Australia to South Western Australia, one from Bunbury measuring 170 x 90 mm., and one from Ellenbrook 170 x 80 mm., both living specimens. The five specimens of *euclia* before me, dredged in the Great Australian Bight, are consistent in the delicacy of the shell and sculpture and paleness of the ornament. Though they vary considerably in relative width, they tend to be narrower than typical shore shells of *rubicunda*. Their form is not a matter of East and West latitude, but probably the result of environment in the quiet depths of 100 fms. on a sandy bottom instead of among rocks on a shore-line. But while searching through the collection I came across a large specimen from Middle River, Kangaroo Island, measuring 210 x 115 mm., which approached *euclia* in size and delicacy and must have measured about 230 mm. in length when complete, thus approximating to the proportions of dredged specimens from the Great Australian Bight. Turning up some old manuscript notes of Verco's, I found the following: "Mr. George Pattison of Cape de Coudie Lighthouse sent Mr. Ashby an example of *Charonia lampas* var. *euclia* in January 1923, which he submitted to me for discussion, and he returned it to the sender with my comments. On Feb. 4 1923 Mr. Pattison wrote to Mr. Ashby as follows"; then the following quotation occurs from Pattison's letter: "The shell was found by myself at Cape de Coudie, Kangaroo Island, on 10 November 1922. I was wading in the sea turning over rocks at low water mark, when I discovered the shell under a rock with the fish alive in it. There were also numerous broken shells of the same species, about seven or eight. Today, being a fairly low tide, I climbed down the cliff and hunted for some live ones. I found two alive and one shell without a fish in it. By what I have observed, I should say that given an extra low tide one could find plenty of specimens." Mr. Pattison's specimen must have been similar to the Middle River specimen before me, which is but slightly heavier than true *euclia*.

I can only suggest that the narrower lighter shell is distinct and is represented in shallow and deep water, the true *euclia* Hedley being the deep water form of a narrower and more delicate species related to *rubicunda*.

MAYENA AUSTRALASIA (Perry 1811)

Biplex australasia Perry 1811, Conch., pl. iv, fig. 2, 4, = *leucostoma* Lamarck 1822.

Loc.—South Australia: Corny Point; Middleton; Robe. Western Australia: Ellenbrook; Rottnest. New South Wales (type).

Remarks—Only three specimens of this species have been seen from South Australia, two beach-worn and one in living condition. It was recorded from Middleton by Adcock, and Yorke Peninsula by Matthews, but I have never dredged it in South Australia and have only taken the one beach-worn specimen at Robe. At Ellenbrook a good series of typical specimens ranging from very small to about 80 mm. by 45 mm., and one from Rottnest. All are similar in form and sculpture to the Tasmanian shells. While apparently common in Western Australia and Eastern Australia, it seems to be extremely rare in South Australia.

Mayena euclia sp. nov.

(Fig. 3)

Shell long, narrow, solid, white with yellowish thin periostracum like coarse muslin, with a minute, erect hair at each intersection; between the larger nodules there is a sparse nut-brown maculation; four rows of nodules beneath the major shoulder row appear on the ventral surface of the body whorl; spire one and a half times the height of the aperture; aperture small, rounded, strongly dentate

except at the middle of the columella; canal long and strongly dentate on the columella side; protoconch (from the juvenile specimen) conical, of four sloping convex whorls, the minute extreme apex absent. Height 90 mm., diameter 43 mm.

Loc.—Western Australia; west of Eucla; Great Australian Bight, 100 fms.

Remarks—Holotype D. 6771, South Australian Museum. The holotype and one juvenile specimen were both briefly recorded by Verco 1912, Trans. Roy.

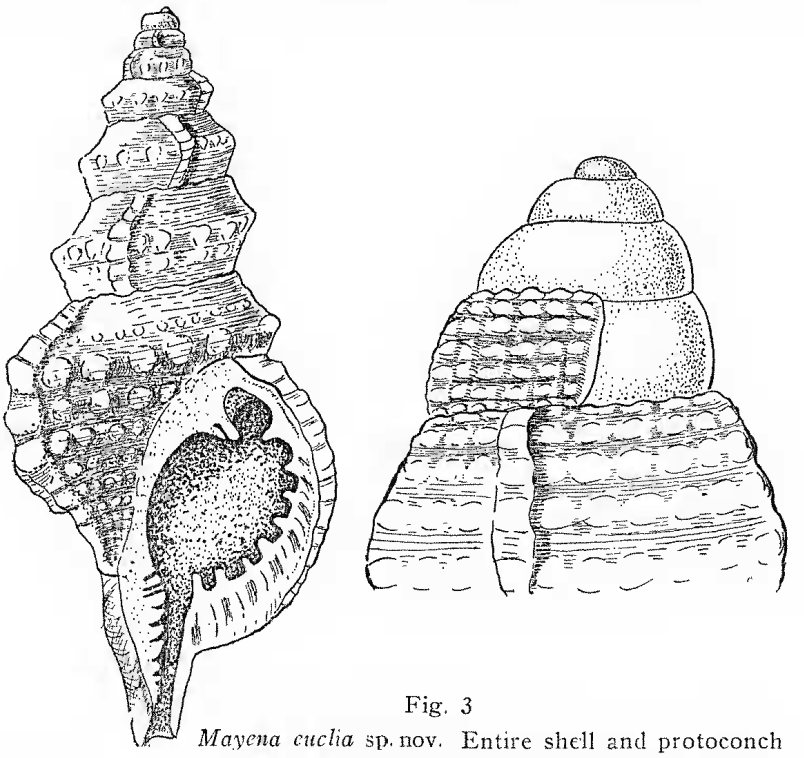

Fig. 3
Mayena cuclia sp. nov. Entire shell and protoconch

Soc. S. Aust., 36, 220, under the name *Argobuccinum australasia*. The specimens are very different from *australasia* in every way. It is long and narrow and has a long anterior canal. It recalls *benthicola* Iredale 1929 from the continental shelf of Eastern Australia, but is even narrower and has a longer and straighter anterior canal.

APOLLON GYRINUS (Linné 1758)

Murex gyrinus Linné 1758, Syst. Nat. Ed., 10, 748.

Loc.—North Australia: Gulf of Carpentaria; Murray Island.

Australian species of CYMATIDAE are here tabulated

Genus and Species	Depth	N.A.	N.Q.	S.Q.	N. N.S.W	S. N.S.W	E. Vict.	W. Vict.	E. S.A.	W. S.A.	S. W.A.	N. W.A.	E. Tas.	S. Tas.	W. Tas.	N. Tas.	S. Pac.	Ind. Oc.
Cymatium Bolten 1798—																		
*femorale** Linné 1758	S	Not Australian. Type loc., West Indies																
lotorium Linné 1758	S	x	x														x	T
sarcostoma Reeve 1844 ..	S	x	x														T	
encaustícum Reeve 1844 ..	S		x														T	
moritinctum Reeve 1822 ..	S		x														T	
pfeifferianum Reeve 1844	S		x															
tuberosum Lamarck 1822 ..	S		x									x					x	T
gracile Reeve 1844	S		x														T	

Australian CYMATIIDAE (continued)

Genus and Species	Depth	N.A.	N.Q.	S.Q.	N. N.S.W	S. N.S.W.	E. Vict.	W. Vict.	E. S.A.	W. S.A.	S. W.A.	N. W.A.	E. Tas.	S. Tas.	W. Tas.	N. Tas.	S. Pac.	Ind. Oc.
chlorostoma Lamarek 1822 ..	S	x	x	x													x	
Cymatilesta Iredale 1936—																		
*spengleri** Perry 1811	S			x	x	T												
barthelemyi Bernardi 1857 ..	S						x	T	x				x	x	x	x		
procurum Iredale 1929	drdgd.																	
boltenianum Adams 1854 ..	S					T												
waterhousei Ad. & Ang. 1865	0-40								x	T								
subsp. *tabulatum* Menke 1843	S										T							
frigidulum Iredale 1929 ..	drdgd.					T												
tepida Iredale 1936	S					T												
Cabestaninorpha Iredale 1936																		
*exarata** Reeve 1844	0-12	T	x	x	x	x					x	x						
vespacea Lamarck 1822 ..	S									x	T?							
cuclia Cotton 1945	81-100										T							
elongata Reeve 1844	S		x														T	
Monoplex Perry 1811—																		
*partheropium** von Salis 1793	S			x	x	T?	x	x										
Lampusia Sehumaker 1817 ..																		
*pilearis** Linné 1758	S					Type loc., Mediterranean												
aquatilis Reeve 1844	S	x	x									x					T	
nicobarica Bolten 1798 ..	S	x	x	x	x												T	
Tritonocauda Dall 1904—																		
*caudata** Gmelin 1791	S	x																T
vulticula Iredale 1936	S					T												
Ranularia Schumaker 1817—																		
*clavator** Lamarek 1822 ..	S																T	
pyrum Linné 1758	S	x	x	x	x													T
sinense Reeve 1844	S	x	x	x	x		Type loc., China											
defrenata Iredale 1936 ..	S				x	T												
Particymatium Iredale 1936—																		
*labiosum** Wood 1828	S			x	x	T												
gemmatum Reeve 1844 ..	S		x														T	
rutilum Menke 1843	S										T							
zimara Iredale 1929	S					T												
Septa Perry 1810—																		
*rubecula** Linné 1758		x	x														**T**	
blacketi Iredale 1936						T												
Distorsio Bolten 1798—																		
*anus** Linné 1758	S		x	x													T	
francesae Iredale 1931 ..	S		x	x		T											x	
Austrosassia Finlay 1931 —																		
*parkinsoniana** Perry 1811 ..	S					T							x	x				
basilicus Iredale 1924	50-70					T												
Negyrina Iredale 1929—																		
*subdistorta** Lamarek 1822 ..	0-40					x	x	x	T				x		x	x		
delecta Cotton 1945	S								T	x								
petulans Hedley & May 1908	0-200							x	x				T	x				
Cymatoma Iredale 1929—																		
*kampyla** Watson 1886 ..	90-410						T	x	x	x			x	x	x	x		
Phanozesta Iredale 1936—																		
*remensa** Iredale 1936 ..	110					T												

Australian CYMATIIDAE (continued)

Genus and Species	Depth	N.A.	N.Q.	S.Q.	N. N.S.W	S. N.S.W.	E. Vict.	W. Vict.	E. S.A.	W. S.A.	S. W.A.	N. W.A.	E. Tas.	S. Tas.	W. Tas.	N. Tas.	S. Pac.	Ind. Oc.
Gondwanula Finlay 1926—																		
*tumida** Dunker 1862	S						x	x	x	x			x	x	x	x	x	
bassi Angas 1869	0-110						T	x	x	x						x		
fraterculus Dunker 1871 ..	0-25						T	x	x	x								
Cymatiella Iredale 1924—																		
*verrucosa** Reeve 1844 ..	0-110						x	T	x	x								
peroniana Iredale 1929 ..	50-60					T												
columnaria Hed. & May 1908	40-100								x	x	x		T					
gaimardi Iredale 1929	0-30								x	T	x							
lesueuri Iredale 1929	S						T	x	x	x	x		x					
eburnea Reeve 1844	S							Not Australian									T	
Obex Iredale 1925—																		
*mulveyanum** Iredale 1925 ..	74					T												
brazieri Angas 1869	S				x	T												
Ratifusus Iredale 1929—																		
*adjunctus** Iredale 1929 ..	50-60					T					x							
mestayerae Iredale 1915 ..	S					x	x	x	x		x		Type loc., N. Caled.					
schoutanicus May 1910 ..	75-80					x	x						T					
conterminus Iredale 1925 ..	100-250						T											
bednalli Brazier 1875	0-200								T	x	x							
volaticus Iredale 1925	S				x	T	x											
Apollon Montfort 1810—																		
*gyrinus** Linné 1758	S	x	x	x														
affine Broderip 1833			x															
ranelloides Reeve 1844 ..			x								x							
Gyrinella Dall 1924—																		
*pusilla** Broderip 1832 ..	S					Type loc., Lord Hood Island												
facetus Iredale 1936	S		x	x	x	T												
deliberatus Iredale 1936 ..	S		T															
Fusitriton Cossmann 1903—																		
*cancellatum** Lamarck ..							Type loc., West Indies											
retiolus Hedley 1914	50-410					x	T											
laudandum Finlay 1926 ..	40						Type loc., New Zealand											
Charonia Gistel 1848—																		
*tritonis** Linné 1758	S	x	x	x			Type loc., West Indies										x	x
rubicunda Perry 1811 ..	S			x	x	T	x	x	x	x	x	x	x		x	x		
euclia Hedley 1914	80-120					x	x	x	x	x	T							
instructa Iredale 1929	50-79					T												
Vernotriton Iredale 1936—																		
pumilio Hedley 1903	0-22				T													
Mayena Iredale 1917—																		
*australasia** Perry 1811 ..						T	x	x	x	x	x							
benthicola Iredale 1929 ..	drdgd.					T												
euclia Cotton 1945	100										T							

Family BURSIDAE

DULCERONA JABICK (Bolten 1798)

Tritonium jabick Bolten 1798, Mus. Bolt., 127.

Loc.—New South Wales (type). Western Australia: Rottnest; Albany; Ellenbrook. South Australia: Kangaroo Island, dredged.

Remarks—Synonyms are *granifera* Lamarck 1816 and *granularis* Bolten 1798, the latter introduced on the same page but following *jabick*. A single living, perfect specimen dredged by Verco at Nepean Bay, Kangaroo Island, was mixed with some *subdistorta*.

The Australian species of BURSIDAE are as follows:

Genus and Species	Depth	N.A.	N.Q.	S.Q.	N. N.S.W	S. N.S.W	E. Vict.	W. Vict.	E. S.A.	W. S.A.	S. W.A.	N. W.A.	E. Tas.	S. Tas.	W. Tas.	N. Tas.	S. Pac.	Ind. Oc.
Bursa Bolten 1798—																		
*bufonius** Gmelin 1791 ..	S							Not Australian									x	T
rana Linné 1758	S	x	x	x														
=*crumena* Lamarck 1822	S																	
mammaria Bolten 1798 ..	S		x	x	x													
venustula Reeve 1844	S		x	x														
bituberculatus Lamarck 1822	S		x					Type loc., Philippines										
Tutufa Jousseaume 1881—																		
bufo Bolten 1798	S		x	x														
lissostoma Smith 1914 ..	S				x	x												
Gyrineum Link 1807—																		
*spinosa** Lamarck 1843 ..	S							Not Australian										T
procator Iredale 1931	drdgd.					T												
cavitensis Reeve 1844	S																T	
Dulcerona Iredale 1931—																		
jabick Bolten 1798	S					T			x		x							
=*granularis* Bolten 1798 ..																		
=*granifera* Lamarck 1816 ..																		
Annoporenna Iredale 1936 ..																		
*verrucosa** Sowerby 1825 ..	S		x	x	x	x		Type loc., Norfolk Island										
Argobuccinum Bruguière 1792																		
succinctum Linné 1771 ..				x	x													

Family TONNIDAE

TONNA VARIEGATA (Lamarck 1822)

Dolium variegata Lamarck 1822, An. c. Vert., 7, 261.

Loc.—Western Australia: Shark Bay (type); 80 miles west of Eucla, 100 fms.; Rottnest; Ellenbrook.

Remarks—Fragments of shell from the last two localities.

Family FICIDAE

FICUS EOSPILA (Peron 1807)

Pyrula eospila Peron 1807, Voy. Terre Austral., 1, 132.

Loc.—Western Australia: Depuch Island (type); Rottnest; 90 miles west of Eucla, 100 fms.

Remarks—A fragment only from Rottnest.

SUMMARY

Four new species are described and the figure of a previously described species is given. Notes and exact locality records of twenty-four other species are also recorded, while complete lists of Australian Cassididae, Cymatiidae and Bursidae are added.